This Brief is Unclassified

U.S. Navy Mine Countermeasures Capabilities

Industry Day
Surface MCM UUV Program

July 20, 2005

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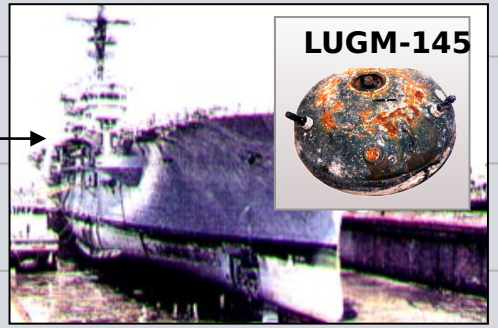
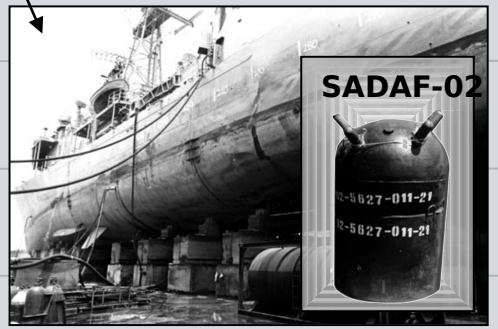
CNO N752 Mine Warfare Branch

This Brief is Unclassified

1950 – Present - US Warship Casualties





Number of Ship Casualties

16
14
12
10
8
6
4
2
0

Korea 1950-52
Israel 1967
Vietnam 1972
Tanker Wars 1987-88
Desert Storm 1991
Terrorist

USS Princeton CG
USS Tripoli LPH
USS Roberts FFG
USS Wches. C LST
USS Strauss DD
USS Warrgtn DD
USS Barton DD
USS Small DDR
USS Walke DD
USS Mansfld DD
USS Brush DD
USS Sarsi ATF
USS Ptridge AMS
USS Pledge AM
USS Pirate AM
USS Magpie AMS

USS Stark FFG
USS Liberty AGTR
USS Liberty AGTR
USS Higbee DD
USS Cole DDG

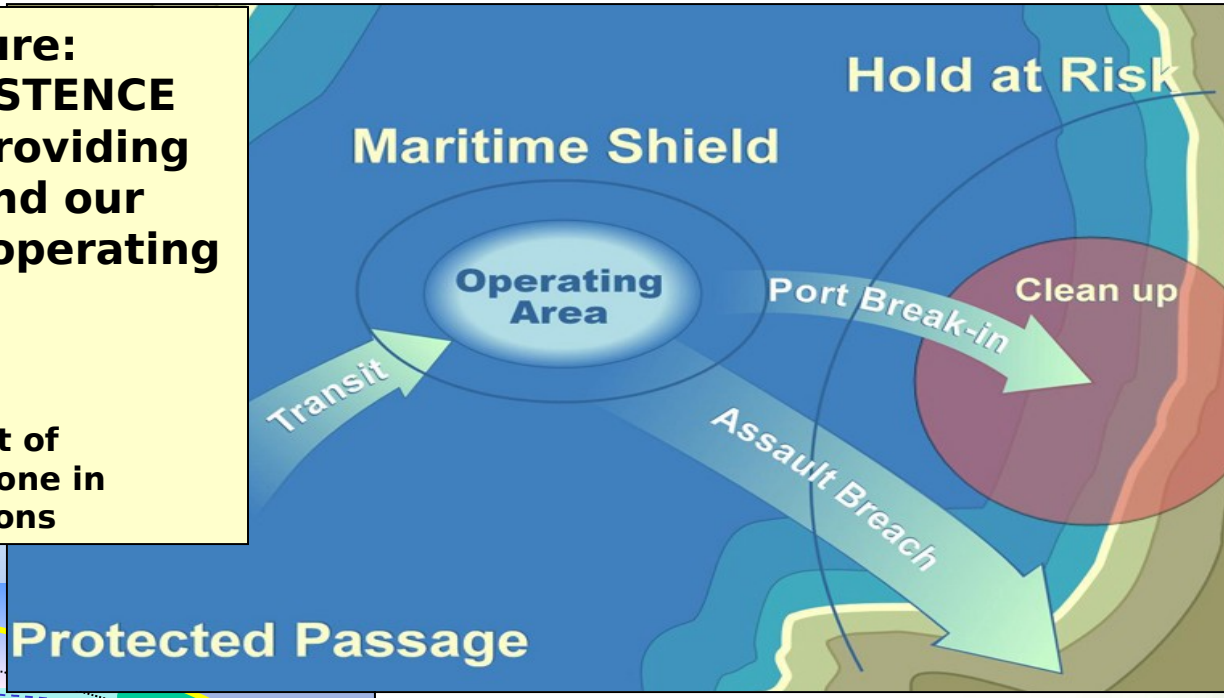
Missile
Torpedo
Mine
Aerial
Small Boat

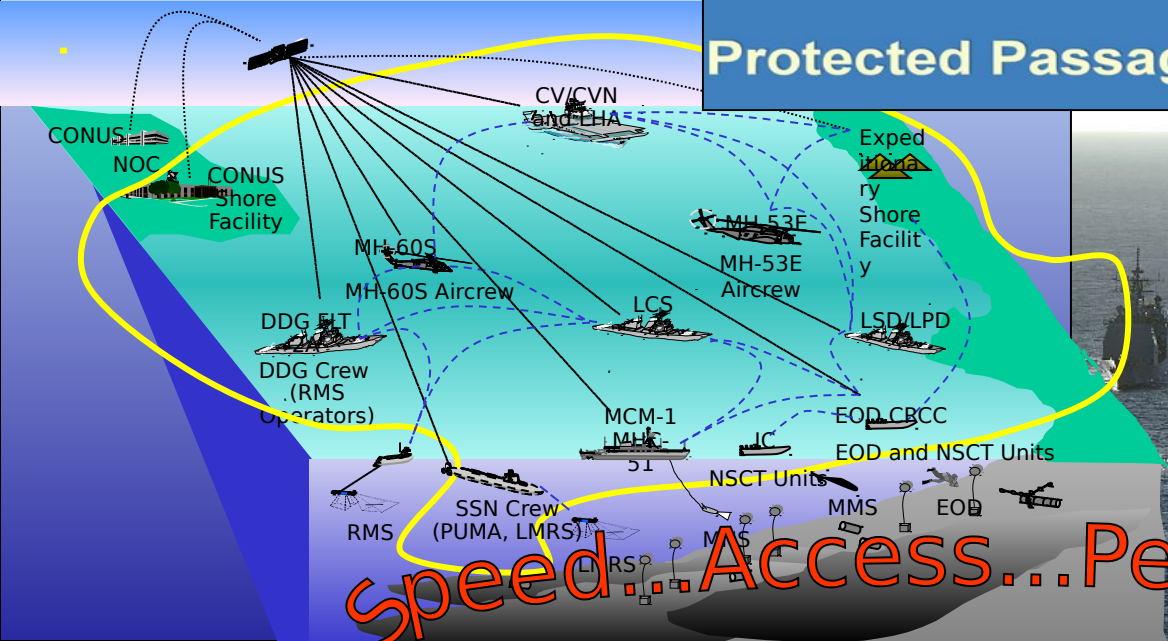
U.S. ship casualties by weapon type since 1950 – there have been 200% more ship casualties caused by mines than by all other

Mine Countermeasures(MCM) Missions

U.S. Navy MCM Forces ensure: SPEED, ACCESS, and PERSISTENCE to our Defense Forces by providing a maritime sea shield around our global and vital homeland operating areas.

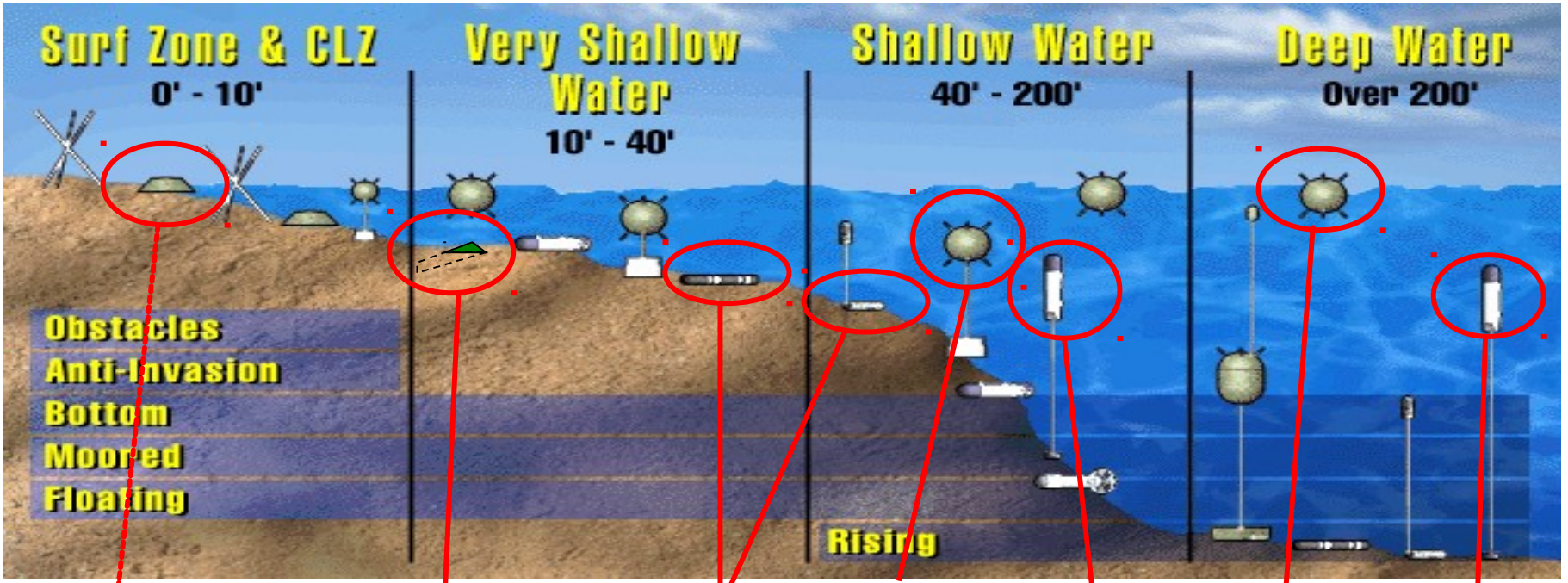
- **Ranging in size: 100 to 900+ NM²**
- **Covering the water column: 200+ ft of mineable waters to the beach exit zone in support of Joint Force Entry Operations**





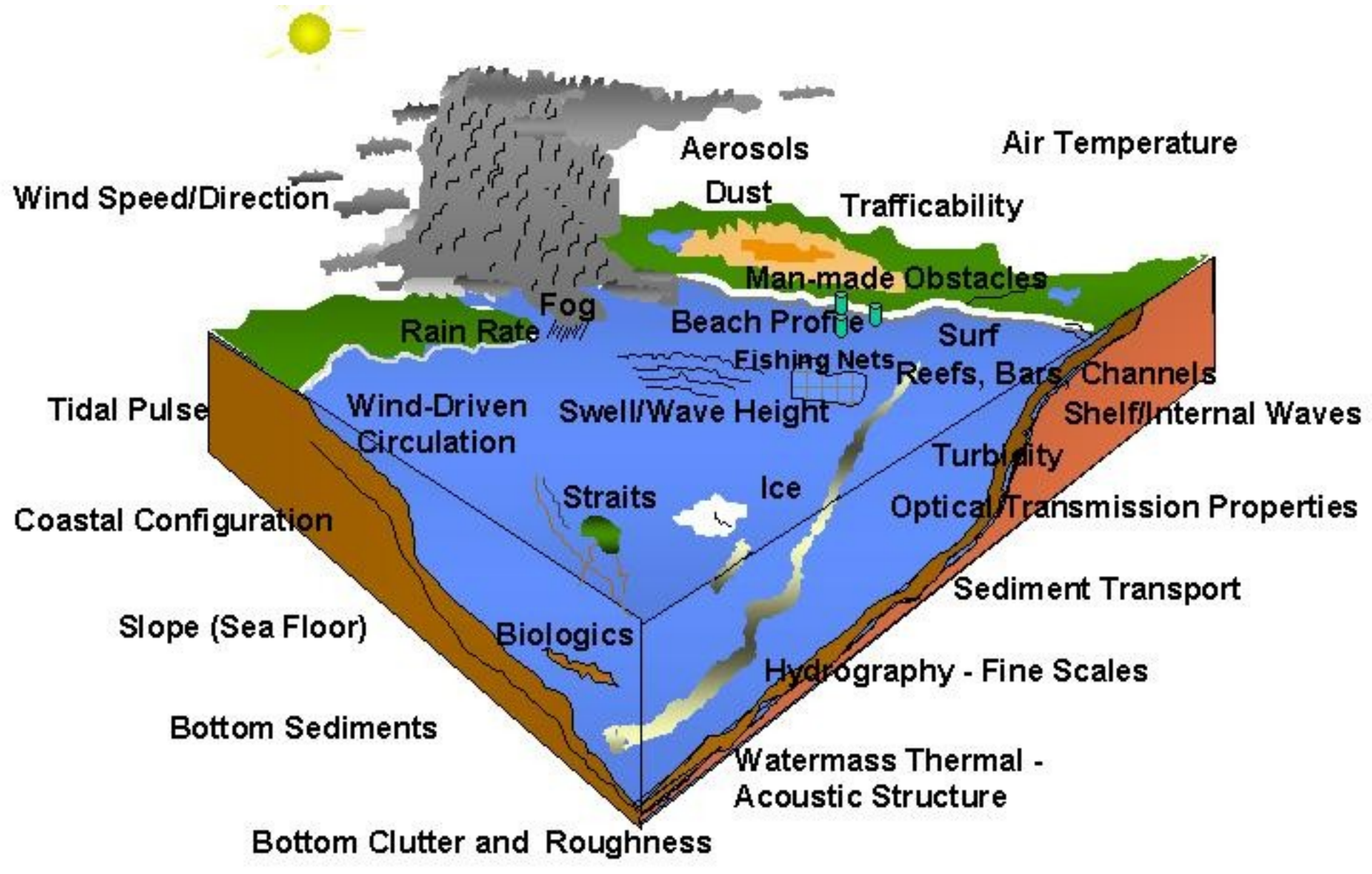
Speed...Access...Persistence

The Threat Across the Littorals

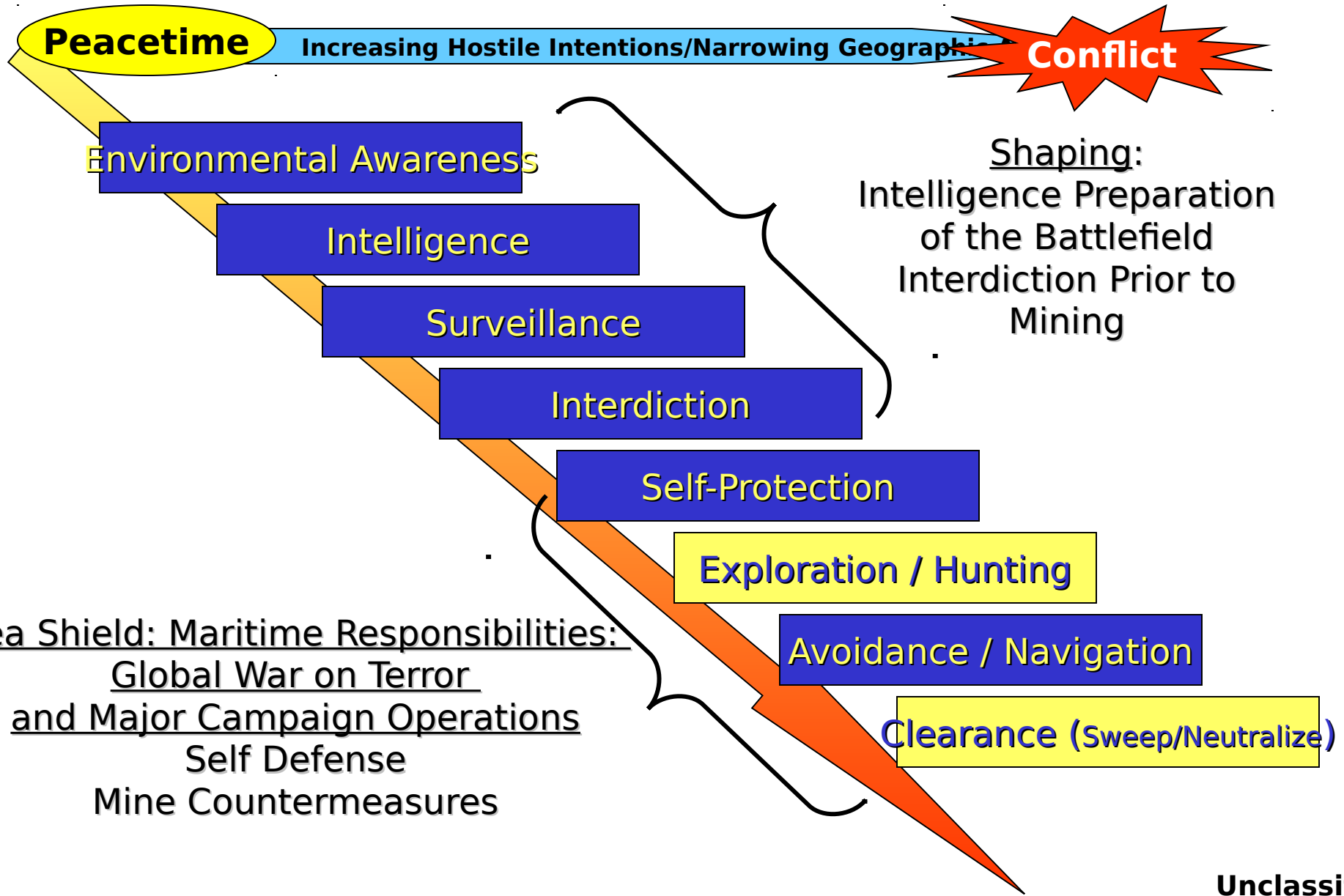


- The real goal of the minefield is Sea Denial, NOT the damage or destruction of a specific ship.
- Navy goal is Assured Access to defeat the minefield, NOT counter every mine.

Littoral Environmental Battlespace Co



Counter Mining Spectrum



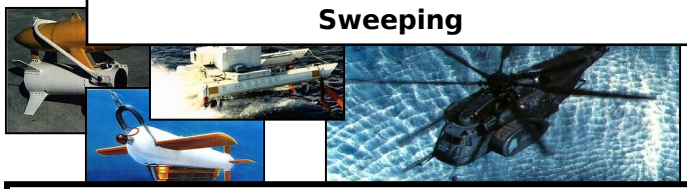
Status: Our Existing Fleet Capability

No Capability Exists Today

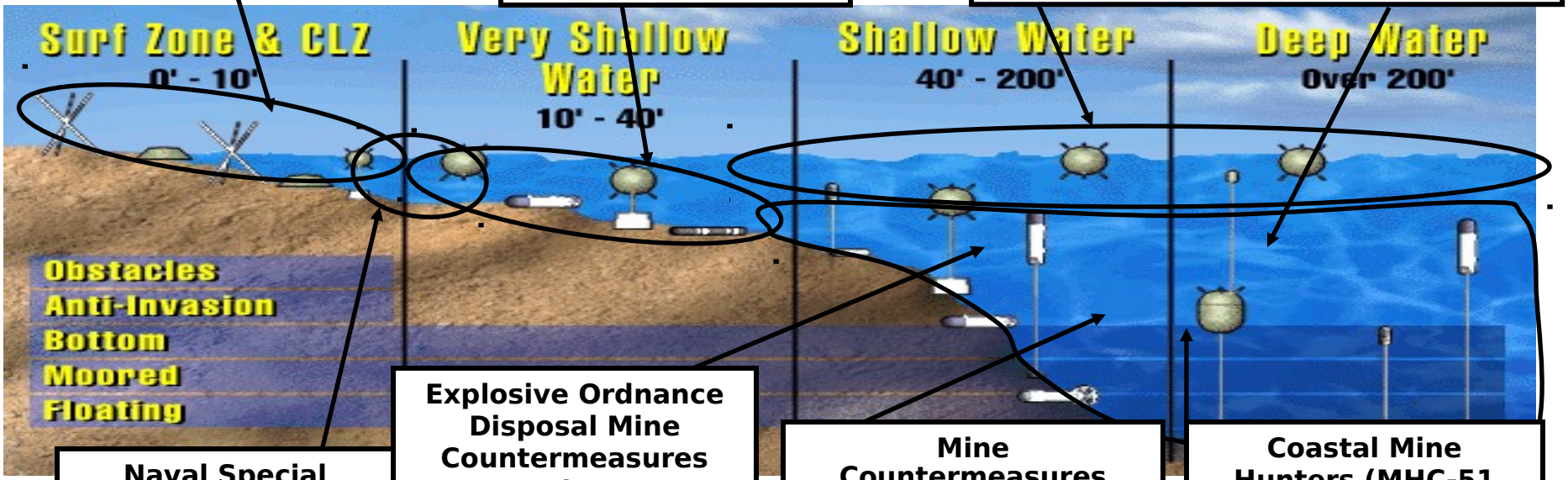
Mine Hunting and Neutralization

Naval Special Clearance Team ONE

Acoustic Mine Detection and Mine Sweeping



Airborne Mine Countermeasures (MH-53E Sea Dragon) (20 total)



Naval Special Warfare

Limited Mine Identification and

Explosive Ordnance Disposal Mine Countermeasures Detachments

Mine Identification and

Mine Countermeasures Ships (MCM-1 Avenger Class Ship) (14 total)

Acoustic Minehunting, Neutralization, and Mine Sweeping

Coastal Mine Hunters (MHC-51 Osprey Class Ship) (12 total)

Acoustic Minehunting and Neutralization

fie

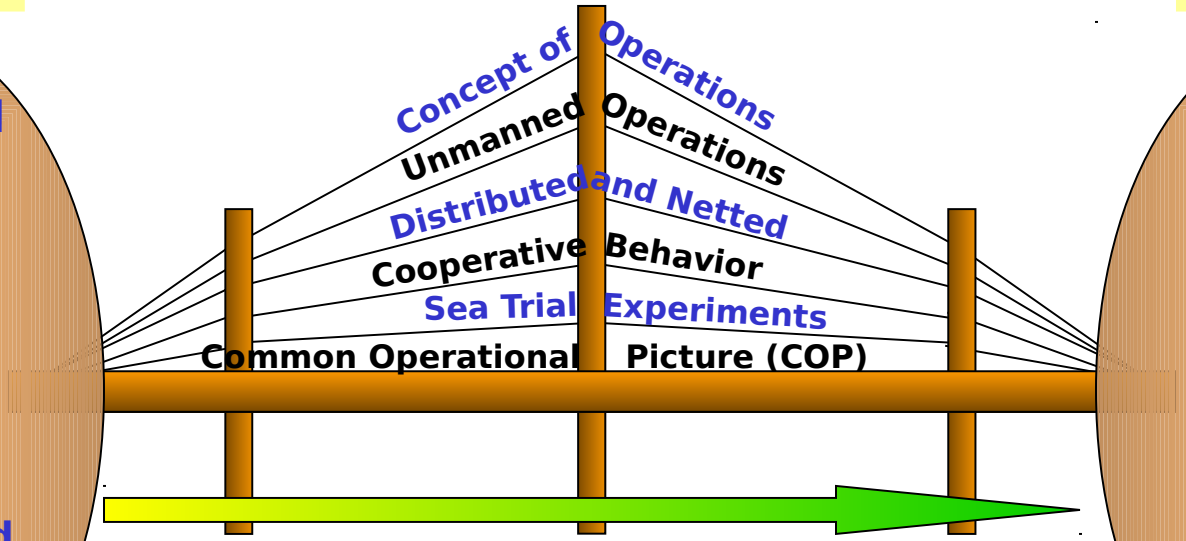
Mine Countermeasures (MCM) Vision

TODAY

Dedicated Platforms and Systems

- Slow
- Heavy
- Large footprint
- Stovepiped
- Primarily CONUS-based

Key Enablers:



FUTURE

Distributed Expeditionary MCM Systems

- Fast
- Light
- Agile
- Precise
- Lethal
- Modular
- Organic

MCM VISION:

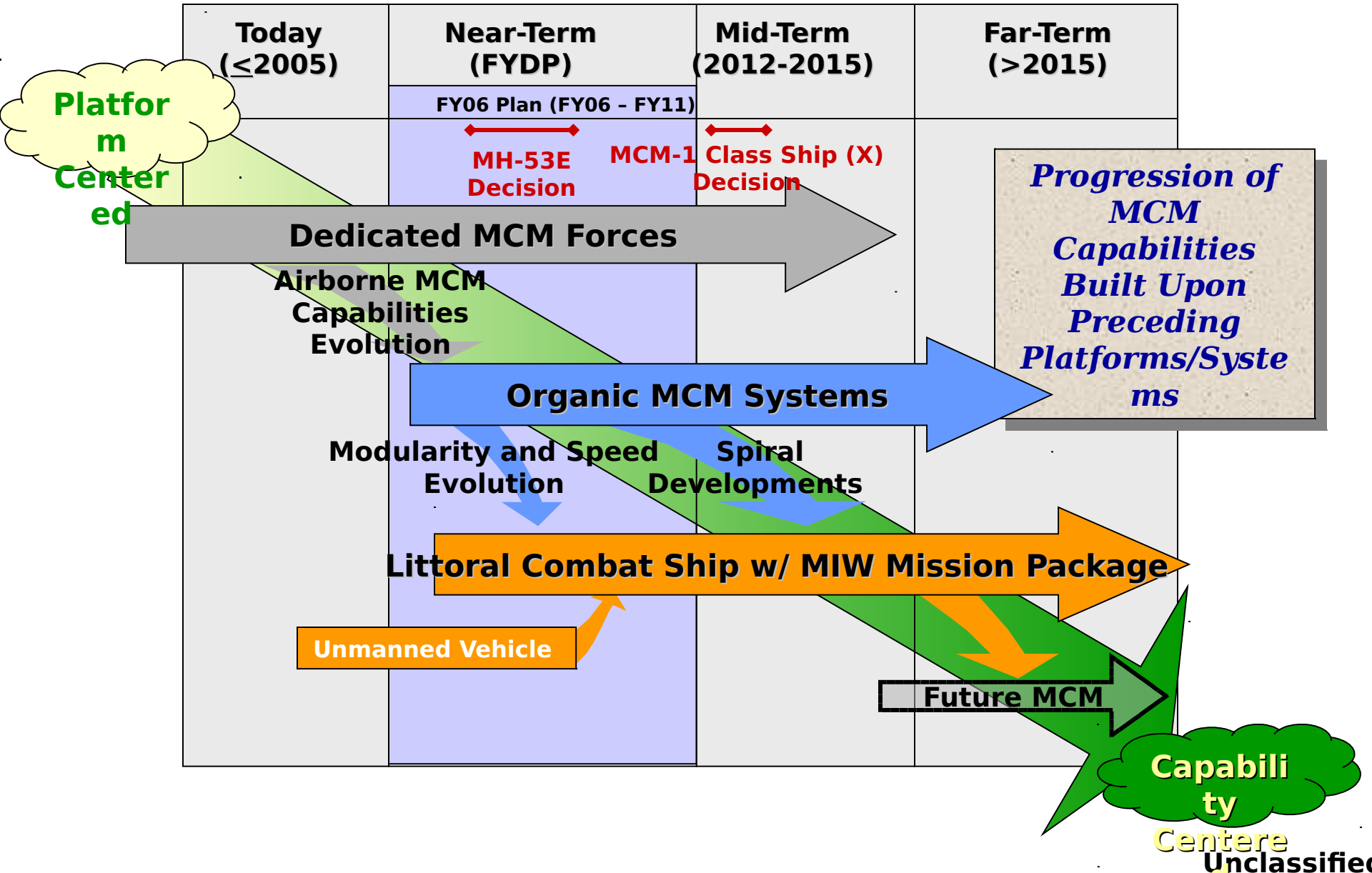
Field a Common Set of Unmanned, Modular MCM Systems Employable from a Variety of Host Platforms or Shore Sites that can Quickly Counter the Spectrum of Mines to Enable Assured Access with Minimum Risk from Mines

Accelerate MCM from Weeks/Days to Hours/Minutes

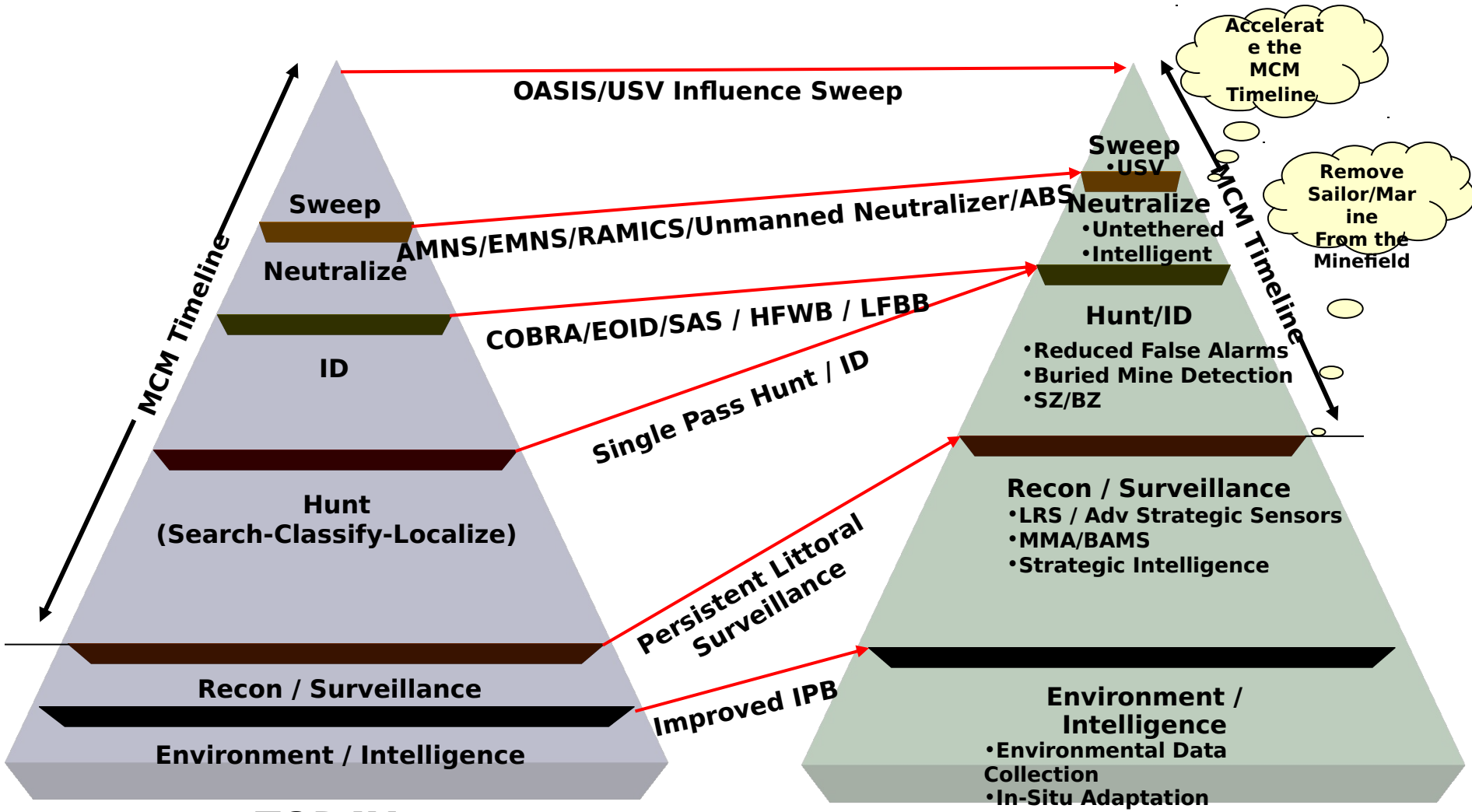
Get the Sailor/Marine Out of the Minefield

*CNO approved 2005 Mine Countermeasures Plan

Roadmap: Mine Countermeasure (MCM) Transition Spirals



MCM Detect-to-Engage Evolutio



Airborne Mine Countermeasures (AMCM)

TODAY

MH-53E

FUTURE

MH-60S

Current Force:

- 2 HM Squadrons
  - HM-14 in Norfolk, VA
  - HM-15 in Corpus Christi, TX
- 32 MH-53E Airframes
  - 9 in HM-14
  - 10 in HM-15
  - 4 in HC-4 Sigonella
  - 4 in Fleet Readiness Sqdn
  - 5 RDTE / Pipeline

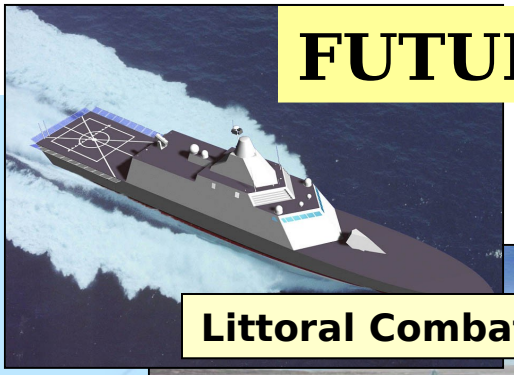
Future MIW Force:

- 10 Carrier Strike Group sqdns with 8 aircraft
- 6 Expeditionary sqdns
  - 4 Aircraft per Expeditionary Strike Group
- 2 USNR

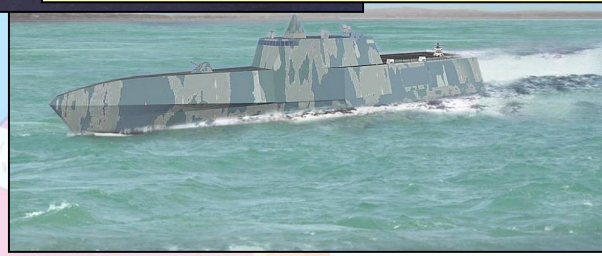
Surface Mine Countermeasures (SMCM)

TODAY

FUTURE



Littoral Combat Ship (LCS



Current Force:

- 14 MCM-1
  - 2 in Manama, Bahrain
  - 2 in Sasebo, Japan
  - 10 in Ingleside, Texas
- 12 MHC-51
  - 2 in Manama, Bahrain

LCS Delivery Schedule:

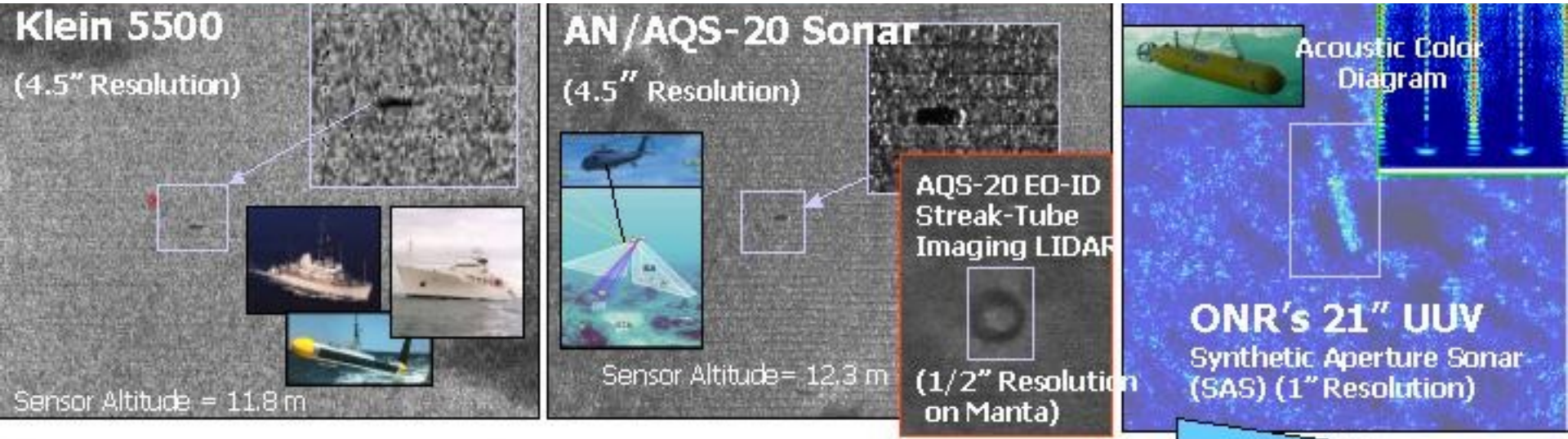
Flight 0

- Ship 1: FY07
- Ship 2: FY08
- Ships 3&4: FY09

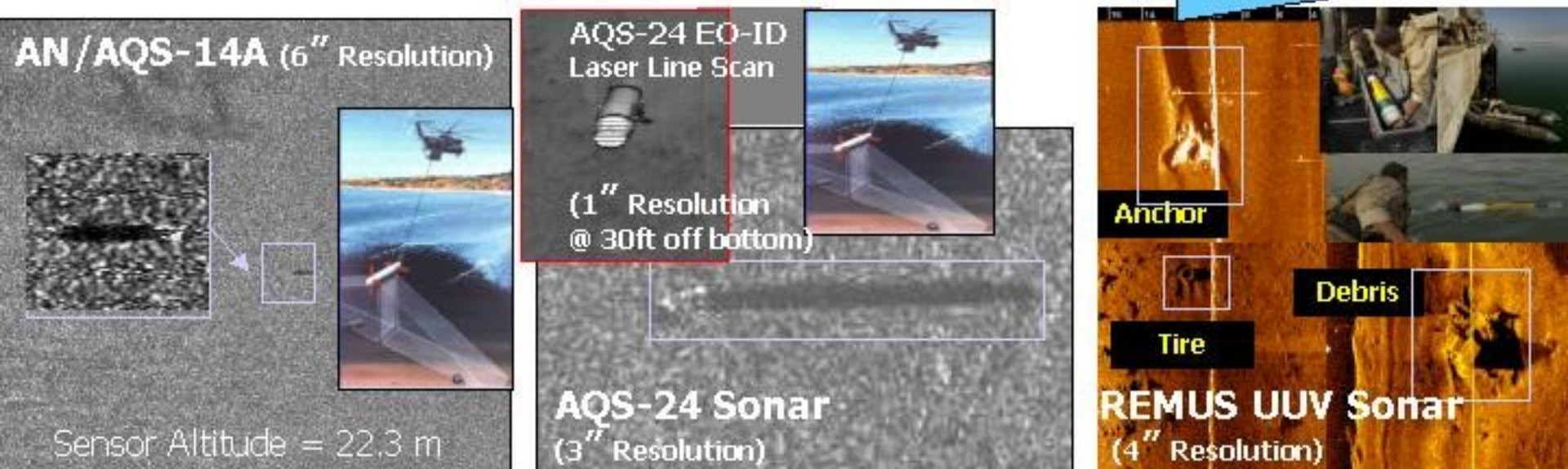
- **Flight 1**
  - Ships 5-7: FY10
  - Ships 8-12: FY11
  - Ships 13-17: FY12
  - Ships 18-22: FY13

Roadmap: Mine Hunting Sensors

Strategy: Improve Sensor Performance-Increase Coverage Rate-Single Pass, Multi-mission-Unmanned Vehicles-Onboard Processing to Fill Capability Gaps



Technology Progression

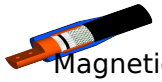


Mine Countermeasures Unmanned Vehicles

Leading the Way towards Our Vision

Unmanned Surface Vehicle Influence Sweep Program

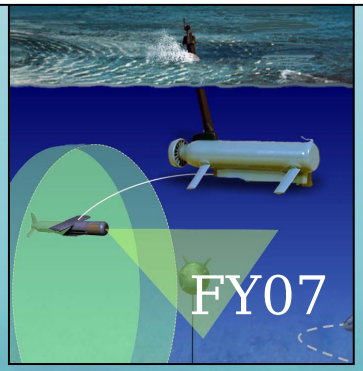
USV-based Minesweeping



Magnetic sweep cable

Acoustic Sweep Device

Remote Minehunting System

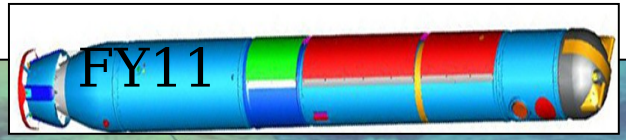


Surface Mine Countermeasure Unmanned Underwater Vehicle and Low Frequency Broadban

SCULPIN Unmanned Underwater Vehicle

Battlespace Preparation Autonomous Underwater Vehicle

Submarine Launched Modular Reconfigurable Unmanned Underwater



Mine Warfare and Environmental Decision Aids Library (MEDAL)-Common Operating Tactical Picture

Littoral Combat Ship MIW Mission Package

Theater/Battle Group & Mine Warfare Commander

CONUS

NOC

CONUS Shore Facility

CV/CVN and LHA

Expeditionary Shore Facility

Speed...Access...Persistence

MH-53E

MH-53E Aircrew

MH-60S

MH-60S Aircrew

DDG FLT 2A

LCS

LSD/LPD

MEDAL Computer Build 10

MCM-1 MHC-51

IC

EOD CRCC

EOD and NSCT Units

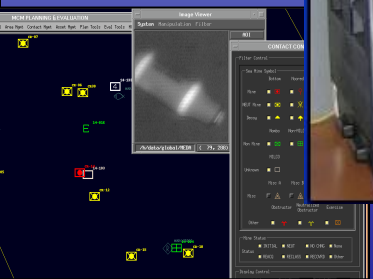
NSCT Units

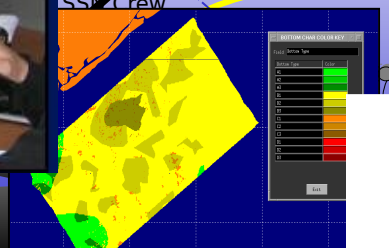
MMS

EOD

MNS

SSM Crew

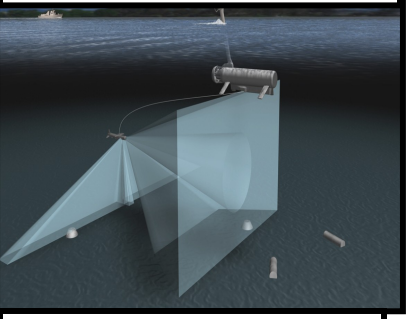




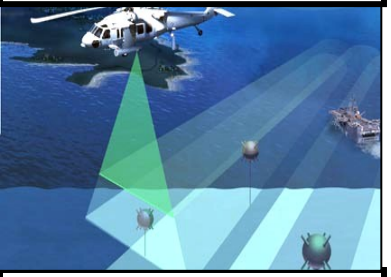
Littoral MCM Net-centric Warfare

Littoral Combat Ship (LCS) Flight 0 & Mine Countermeasures Mission Package

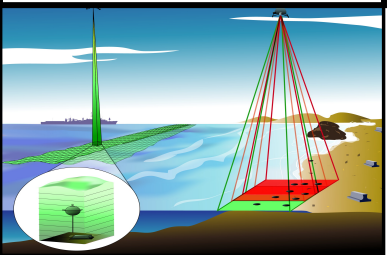
Remote Mine Hunting System & AN/AQS20A

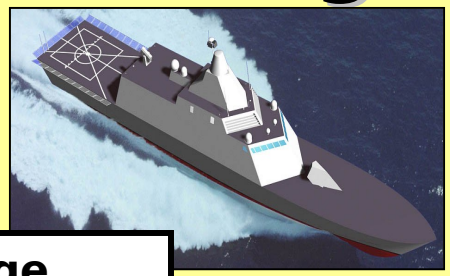


Airborne Laser Mine Detection System

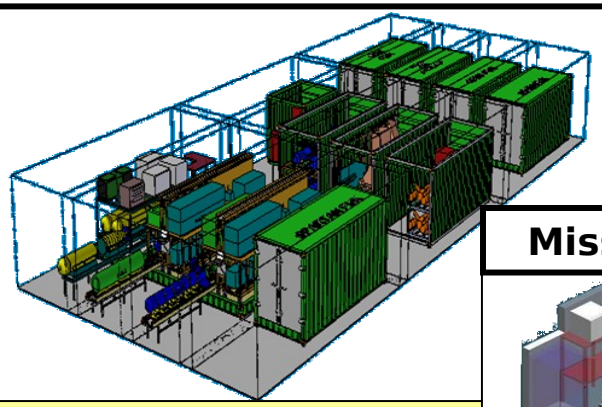


Coastal Battlefield Reconnaissance & Analysis System

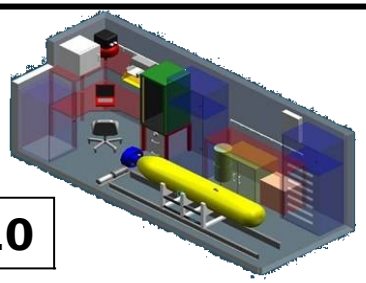




Mission Package

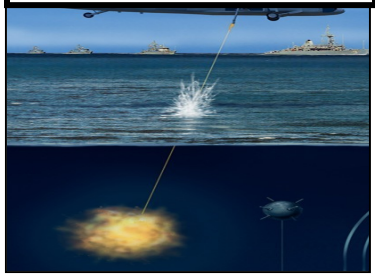


Mission Module

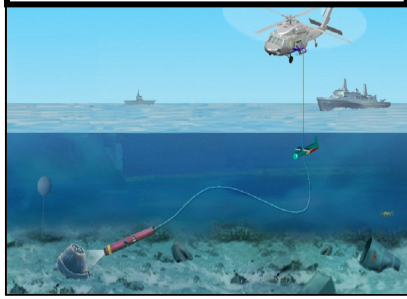


Full MIW Package: FY10

Rapid Airborne Mine Clearance System



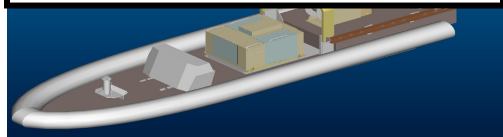
Airborne Mine Neutralization System



SCULPIN Unmanned Underwater Vehicle

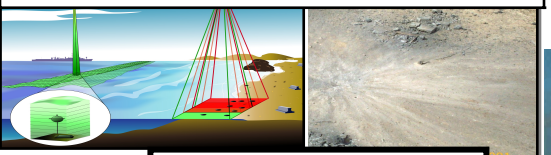
Battlespace Preparation Autonomous Underwater Vehicle

Unmanned Surface Vehicle & Organic Airborne and Surface Influence Sweep

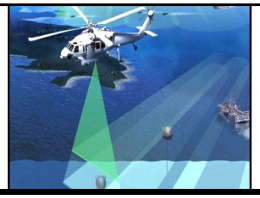


Coverage Complete

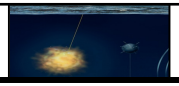
Minefield Detection and Neutralization

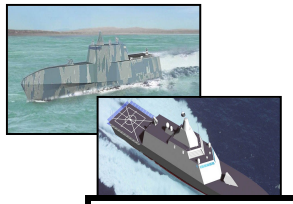


Laser (Hunt)



Super-cavitating Projectiles (Kill)





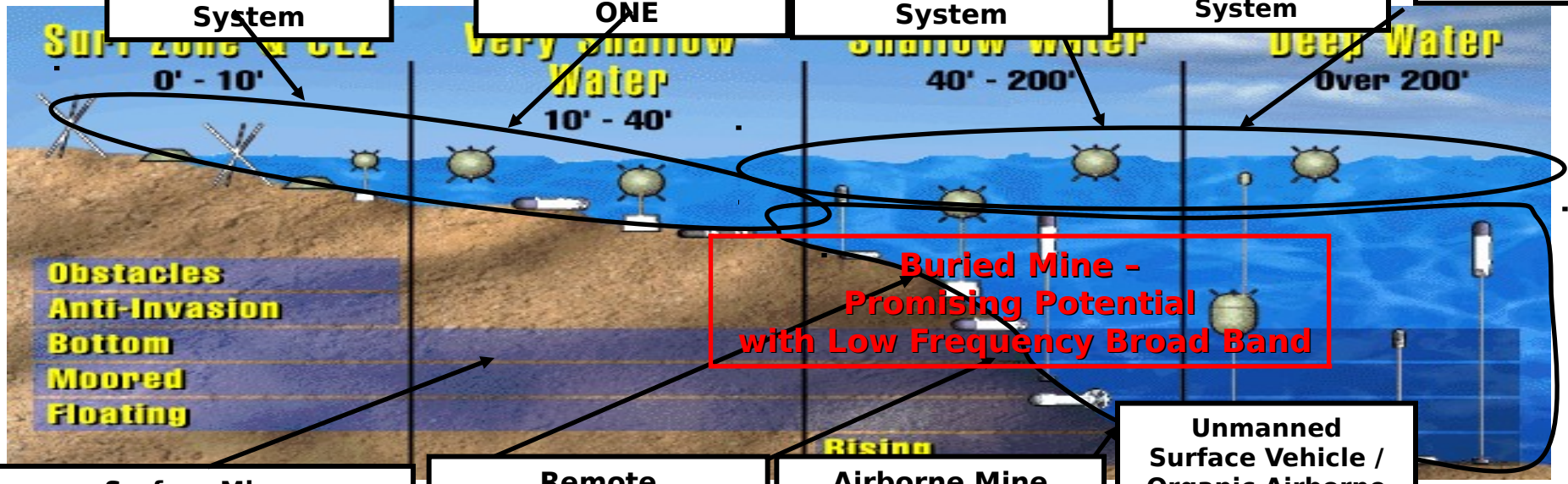
Littoral Combat Ship

Assault Breaching System

Naval Special Clearance Team ONE

Airborne Laser Mine Detection System

Rapid Airborne Mine Clearance System



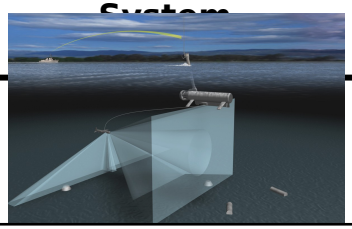
Surface Mine Countermeasures

Unmanned Underwater Vehicle

and Low Frequency Broadband

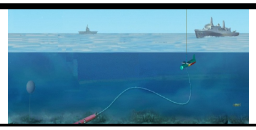
Buried Mine Detection

Remote Minehunting System



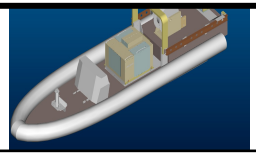
Sonar (Hunt)

Airborne Mine Neutralization System



Self propelled explosive charges (Kill)

Unmanned Surface Vehicle / Organic Airborne and Surface Influence Sweep



Magnetic Acoustic Influence Sweep